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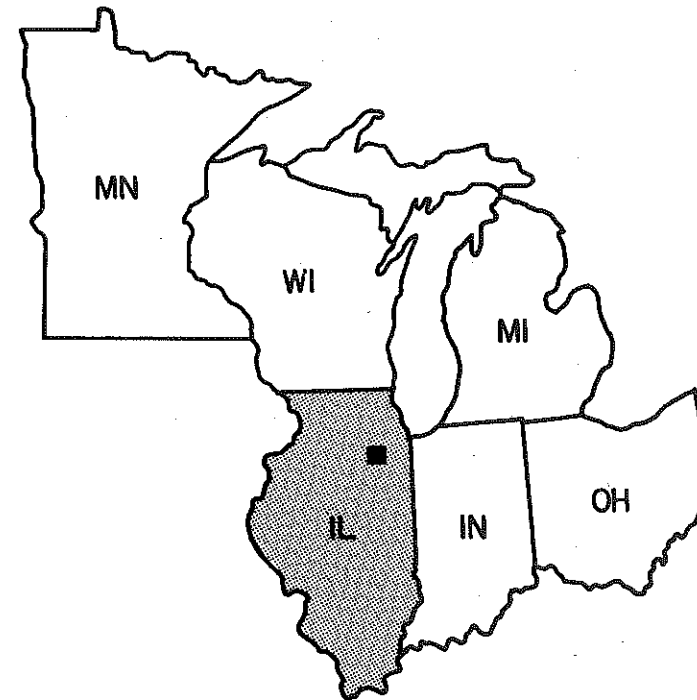
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Research and Development



Site Analysis General Electric Morris, Illinois

EPA Region 5



F.1 Imagery/Special Studies (Aerial)
GE (Morris Operations)

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Site Analysis
General Electric
Morris, Illinois

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ABSTRACT

An analysis of October 1987 aerial photography of the General Electric power plant in Morris, Illinois was performed at the request of the Environmental Protection Agency's (EPA) Region 5 office in support of Resource Conservation and Recovery Act (RCRA) Enforcement activities.

The objective of this analysis was to document storage and disposal activities at the site, with special interest focused on noting lagoons, tanks, fuel storage sites, drums or disposal areas. Lagoons, debris mounds, vertical tanks and waste storage areas were identified from the aerial photography and collateral information obtained from EPA Region 5.

The EPA's Environmental Photographic Interpretation Center in Warrenton, Virginia, a branch of the Advanced Monitoring Systems Division of the Environmental Monitoring Systems Laboratory in Las Vegas, Nevada, performed this analysis at the request of EPA Region 5 in Chicago, Illinois, and the Office of Waste Programs Enforcement - RCRA Enforcement Division in Washington, D.C. This analysis of October 1987 photography was completed in May 1988.

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INTRODUCTION

The 526-hectare (1,299-acre) General Electric power plant and waste storage facility is located 12 kilometers (7.5 miles) east of Morris, Illinois. An analysis of October 1987 aerial photography was initiated at the request of the Environmental Protection Agency's (EPA) Region 5 to provide information on compliance with Resource Conservation and Recovery Act (RCRA) regulations. The objective of this analysis is to document storage and disposal activities at the site, noting features such as lagoons, tanks, fuel storage areas, drums, and disposal areas. Lagoons, tanks, waste storage areas and disposal areas were identified. No drums or fuel storage areas were noted.

Color infrared aerial photography of the General Electric facility from October 1987 was obtained from the U.S. Army Corps of Engineers.¹

Figure 1 shows the site location, keyed to a photocopied mosaic of two U.S. Geological Survey (USGS) 1:24,000-scale topographic maps. Two photographic prints were required to illustrate the entire site. The two photo areas are depicted on the location map (Figure 1) as Figures 2A and 2B. Figure 2A is from October 8, 1987 aerial photography and shows the northern section of the site, which contains the power plant. Figure 2B is from October 12, 1987 aerial photography and depicts the southern section of the site, which contains the waste storage and disposal facility* for the power plant. Site boundaries or areas used in the analysis were provided in collateral data supplied by EPA Region 5 and do not necessarily denote legal property lines or ownership. Some features were identified from collateral information supplied by EPA Region 5. These features are noted with an asterisk (*).

The EPA's Environmental Photographic Interpretation Center in Warrenton, Virginia, a branch of the Advanced Monitoring Systems Division of the Environmental Monitoring Systems Laboratory in Las Vegas, Nevada, performed this analysis at the request of EPA Region 5 in Chicago, Illinois, and the Office of Waste Programs Enforcement - RCRA Enforcement Division in Washington, D.C. This analysis of October 1987 photography was completed in May 1988.

¹A complete listing of maps and photography used in this report can be found in the References section.

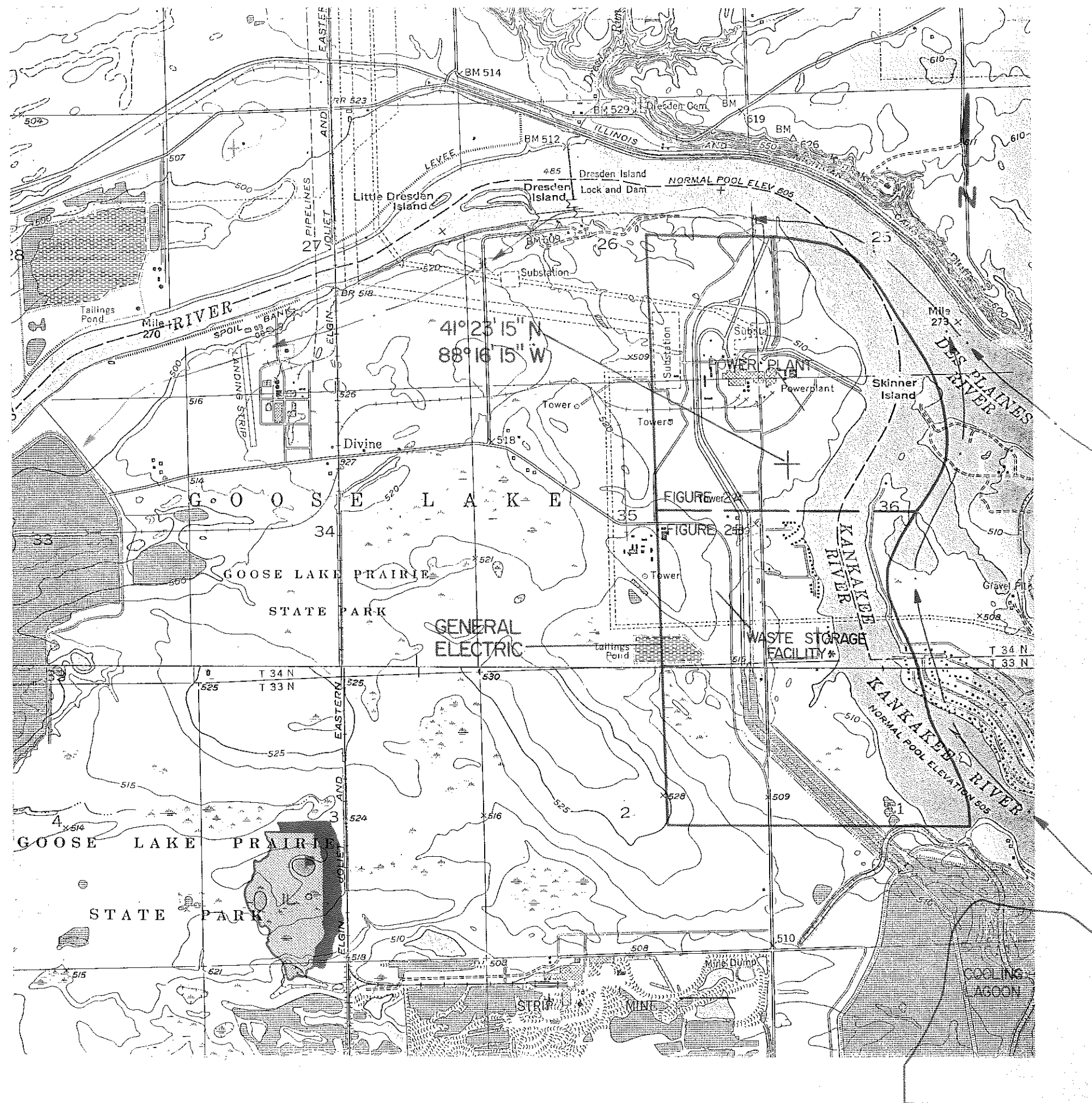


FIGURE 1
GENERAL ELECTRIC

LOCATION MAP
MINOOKA & COAL CITY, IL. QUADS

APPROX SCALE 1:24,000

METHODOLOGY

A search of government and commercial sources was undertaken to obtain the best available aerial photography of the site spanning the desired time frame. The photography and other sources of information used in this report are listed in the References section.

The analysis was performed by viewing backlit transparencies of aerial photography through stereoscopes. Stereoscopic viewing creates a perceived three-dimensional effect which, when combined with viewing at various magnifications, enables the analyst to identify signatures associated with different features and environmental conditions. The term "signature" refers to a combination of visible characteristics (such as color, tone, shadow, texture, size, shape, pattern and association) which permit a specific object or condition to be recognized on aerial photography.

The analyst's findings are annotated on overlays to prints and/or base maps and described in the accompanying text. Site boundaries or areas used in this analysis were determined from information supplied by EPA Region 5 and do not necessarily denote legal property lines or ownership.

Due to factors inherent in the photographic printing process, prints do not exhibit the level of detail that is visible in the original aerial photography. Therefore, some features identified from the aerial photography may not be clearly discernible, or even visible, on the photographic prints presented in this report.

Only color infrared aerial photography was used for this analysis. Color infrared film differs from regular color film in that the three emulsion layers of "normal" color film are sensitive to energy in the blue, green and red portions of the electromagnetic spectrum (all visible wavelengths), whereas the three emulsion layers of color infrared film are sensitive to the green, red and reflective infrared portions. Because color infrared film is sensitive to most of the visible portions of the spectrum in addition to the reflective infrared wavelengths, objects with differences in reflectance in the visible or reflective infrared wavelengths (or a combination of both) will appear different in tone on the color infrared film than on "normal" color film. As an example of this feature, healthy vegetation appears red on color infrared film.

The terms "possible" and "probable" are used to indicate the degree of certainty of signature identification. "Possible" is used when only a few characteristics are discernible or these characteristics are not unique to a signature. "Probable" is used when incrementally more characteristics or stronger characteristics of a signature are discernible. No qualifying terms are used when the characteristics of a signature allow for a definite feature identification.

AERIAL PHOTO SITE ANALYSIS

OCTOBER 8, 1987 (FIGURE 2A)

One stream channel flows northwest from the site into the Illinois River. All other natural drainage comes from surface runoff into the north- and west-flowing Kankakee and Illinois Rivers.

An intricate network of canals is visible on the site. These canals provide access to the Illinois and Kankakee Rivers for the intake and discharge of cooling water.

Twenty-one vertical tanks (VT) and two horizontal tanks (HT) are located within the power plant facility. General housekeeping around the tanks appears to be good, as does the overall condition of the tanks. Only two vertical tanks are revetted (RV).

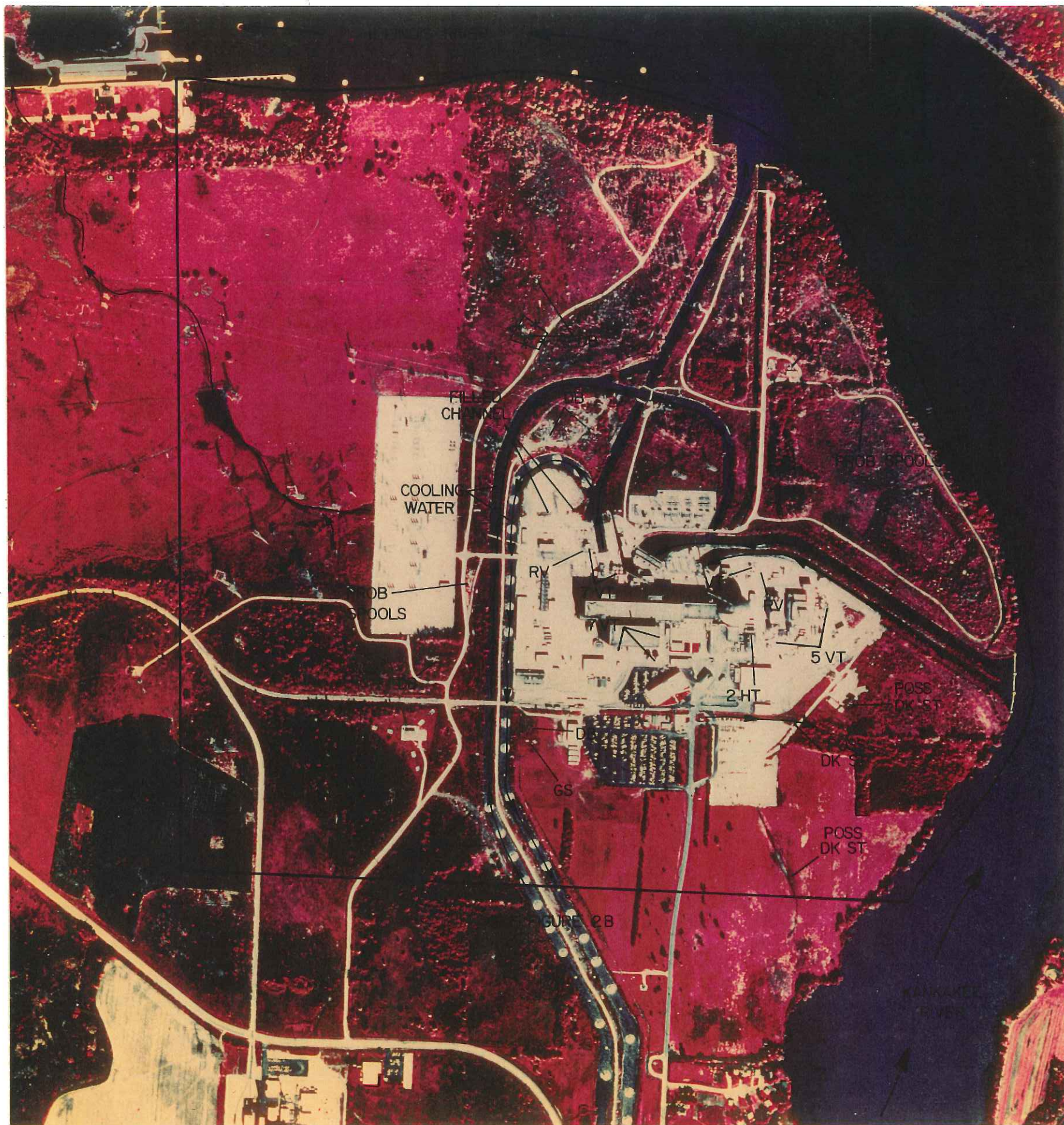
Mounds of debris (DB) northwest and southwest of the power plant indicate onsite disposal of unidentified material. One of the debris mounds northwest of the power plant is located in a small pit (not annotated) and surrounded by a fence.

Probable spools are located west of the power plant and near the river in the northeast portion of the site.

Three possible dark-toned (DK) ground stains (ST) are seen southeast of the power plant. One possible ground stain is associated with a drainage ditch that flows to the east. Another possible stained area is along a dirt road that exits southward from the parking area. The third possible stained area is associated with a parking area and buildings.

A solid waste (SW) disposal area is located southwest of the power plant. Light-toned material, spools, and other unidentifiable objects are present.

A small channel (cooling water) northwest of the power plant appears to have been partially filled.



- LEGEND
- B - Building
 - DB - Debris
 - DK - Dark-Toned
 - EX - Excavation
 - GS - Ground Scar
 - HT - Horizontal Tank
 - L - Lagoon
 - LT - Light-Toned
 - MM - Mounded Material
 - RV - Revetment
 - ST - Stain
 - SW - Solid Waste Disposal
 - VT - Vertical Tank
 - Channelized Drainage
 - Drainage
 - *-* Fence
 - ↔↔↔ Indeterminate Drainage
 - Direction
 - Site Boundary

FIGURE 2A
GENERAL ELECTRIC

OCTOBER 8, 1987

APPROX SCALE 1"=8,300

OCTOBER 12, 1987 (FIGURE 2B)

One vertical tank is visible in the north portion of the print. It appears to be in good condition with good housekeeping in the area.

Probable spools are located in a storage area adjacent to the canals in the southeast portion of the print. Several vehicles (not annotated) and small buildings (B) are associated with this storage area.

The waste storage facility* for the power plant contains a water tower, two radioactive waste vaults,* and two other waste storage areas.

Three small lagoons (L) are located just south of the waste storage facility. Two of these lagoons appear to discharge into a small drainage channel that flows southeast to the Kankakee River. The third small lagoon appears to have a west-directed drainpipe at its northern terminus, but no drainage is emanating from it.

East of the waste storage facility is a small excavation (EX) with vehicle tracks connecting it to the facility. South of the facility light-toned (LT) mounded material (MM) is stored adjacent to a ground scar (GS) and the southeast-flowing drainage.

Water canals extending northward from the power plant transport water southeastward, to and from a cooling and storage pond system located offsite (not visible on the photograph; see Figure 1).

A large lagoon or pond in the southwest portion of the site is fully contained with no observable discharge.



FIGURE 2B
GENERAL ELECTRIC

OCTOBER 12, 1987
7

APPROX SCALE 1:8,300

REFERENCES

AERIAL PHOTOGRAPHY

<u>Date</u>	<u>Agency</u>	<u>Mission Code</u>	<u>Agency Frame #</u>	<u>Orig. Scale</u>	<u>EPIC Frame #</u>
October 8, 1987	USACOE ¹		0198,0199	1:24,000	19265,19266
October 12, 1987	USACOE		0001-0003	1:24,000	19262-19264

MAPS

<u>Source</u>	<u>Name</u>	<u>Scale</u>	<u>Date</u>
USGS ²	Minooka, IL	1:24,000	1980
USGS	Coal City, IL	1:24,000	1980

¹U.S. Army Corps of Engineers, Rock Island District, Rock Island, Illinois

²U.S. Geological Survey, U.S. Department of the Interior